DRAFT

PERFORMANCE SPECIFICATION FOR THE
HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE
(HMMWV)
October 2002

1. **SUMMARY**. The High Mobility Multipurpose Wheeled Vehicle (HMMWV) mission is to provide a light tactical wheeled vehicle for command and control, troop transport, light cargo transport, shelter carrier, ambulance, towed weapons prime mover, and weapons platform throughout all areas of the battlefield or mission area (e.g., peacekeeping).

The HMMWV is not designed to counter a specific threat, but rather to provide a light tactical wheeled vehicle for command and control, troop mobility, and special purposes throughout the battlefield or mission area.

The HMMWV is subject to the same physical threat as the units with which it is co-located. This includes a variety of threat weapon systems, ranging from artillery and missiles to small arms. The HMMWV may have to operate on a Nuclear, Biological, or Chemical (NBC) contaminated battlefield. The communications and data information infrastructure may be targeted by electronic warfare and is subject to the effects of electromagnetic pulse resulting from a nuclear detonation or conventional explosion. If the HMMWV is employed as a command and control vehicle, the computers and communications infrastructure may be targeted by sabotage, terrorist actions, or information warfare methods, to include computer viruses.

2. **APPLICABLE DOCUMENTS**.

2.1. SPECIFICATIONS, STANDARDS, DRAWINGS AND HANDBOOKS. Specifications, standards, drawings and handbooks cited herein form a part of this specification, to the extent indicated. Unless otherwise stated, the issue of the documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplements cited in the specification in effect on the date of invitation for bids or request for proposal.

2.2. ORDER OF PRECEDENCE: In the event of a conflict between the text of this specification and the references cited herein the text of this specification takes precedence. Nothing in this specification, however, shall constitute a waiver of compliance to applicable laws and regulations.

2.3. DOCUMENTS.

2.3.1. Government:

2.3.1.1. Specifications:

A-A-50271	Plate, Identification
A-A-52426	Hose and Hose Assemblies, Non-Metallic, Silicone, Polyester and Wire Reinforced
A-A-52464	Type III Coupler, Drawbar, Ring
A-A-52557	Fuel Oil, Diesel
A-A-52624	Antifreeze, Multi Engine Type
ATPD-2206R6 or	MIL-XXX-32042 (when available) Batteries, Storage: Lead-Acid (Low Maintenance)
MIL-DTL-5624	Turbine Fuel, Aviation, Grades JP-4 and JP-5
MIL-F-16884	Fuel, Naval Distillate
MIL-PRF-2104	Lubricating Oil, Internal Combustion Engine, Combat/Tactical Service
MIL-PRF-2105	Lubricating Oil, Gear, Multipurpose (Metric)
MIL-PRF-46167	Lubricating Oil, Internal Combustion Engine, Arctic
MIL-PRF-10924	Grease, Automotive and Artillery
MIL-T-83133	Turbine Fuel, Aviation, Kerosene Type, Grades JP-8

2.3.1.2. Standards:

FMVSS 101	Controls and Displays
FMVSS 102	Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect
FMVSS 103	Windshield Defrosting and Defogging Systems
FMVSS 104	Windshield Wiping and Washing Systems
FMVSS 105	Hydraulic Brake Systems
FMVSS 106	Brake Hoses
FMVSS 108	Lamps, Reflective Devices and Associated Equipment
FMVSS 111	Rearview Mirrors
FMVSS 113	Hood Latch System
FMVSS 116	Brake Fluids
FMVSS 119	New Pneumatic Tires for Vehicles other than Passenger Cars
FMVSS 124	Accelerator Control Systems
FMVSS 125	Warning Devices

FMVSS 203	Impact Protection for the Driver from the Steering Control System
FMVSS 204	Steering Control Rearward Displacement
FMVSS 205	Glazing Materials
FMVSS 206	Door Locks and Door Retention Components
FMVSS 207	Seating Systems
FMVSS 208	Occupant Crash Protection
FMVSS 209	Seat Belt Assemblies
FMVSS 210	Seat Belt Assembly Anchorage’s
FMVSS 212	Windshield Mounting
FMVSS 216	Roof Crush Resistance
FMVSS 219	Windshield Zone Intrusion
FMVSS 301	Fuel System Integrity
FMVSS 302	Flammability of Interior Materials

MIL-STD-129	Military Marking
MIL-STD-209	Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment
MIL-STD-461	Requirements for the Control of Electromagnetic Interference, Emissions and Susceptibility
MIL-STD-642	Identification Marking of Combat and Tactical Transport Vehicles
MIL-STD-662	V-50 Ballistic Test for Armor
MIL-STD-810	Environmental Test Methods and Engineering Guidelines
MIL-STD-814	Requirements for Tiedowns, Suspension and Extraction Provisions on Military Materiel for Airdrop
MIL-STD-889	Dissimilar Metals
MIL-STD-913	Requirements for the Certification of Sling Loaded Military Equipment for External Transportation by Department of Defense Helicopters
MIL-STD-1223	Non-tactical Wheeled Vehicles Treatment, Painting, Identification Marking and Data Plate Standards
MIL-STD-1275	Characteristics of 28 Volt DC Electrical Systems in Military Vehicles
MIL-STD-1366	Interface Standard for Transportability Criteria
MIL-STD-1472	Human Engineering Design Criteria Military Systems Equipment and Facilities
MIL-STD-1474	Noise Limits for Army Materiel

2.3.1.3. Handbooks:

MIL-HDBK-310	Global Climatic Data For Developing Military Products
MIL-HDBK-669	Loading Environment and Related Requirements for Platform Rigged Airdrop Material
MIL-HDBK-759	Human Factors Engineering Design for Army Materiel
MIL-HDBK-1791	Designing for Internal Aerial Delivery in Fixed Winged Aircraft

2.3.1.4. Drawings:

12342917	Receptacle Assembly
12446760	Alternator, 400 Amp
MS500048	Towbar, Motor Vehicle: Light, Medium and Heavy Duty (for Vehicles 2 ½ to 50 tons and Heavier)

2.3.1.5. Other:

QSTAG-244	High Altitude Electromagnetic Pulse

2.3.2. Non-Government Publications:

2.3.2.1. Society of Automotive Engineers:

SAE-J163	Low Tension Wiring and Cable Terminals and Splice Clips
SAE-J366	Exterior Sound Level for Heavy Trucks and Busses Performance Requirements Trucks, Busses, and Multipurpose Vehicles
SAE-J645	Automotive Transmission Terminology
SAE-J839	Passenger Car Side Door Latch Systems
SAE-J902	Passenger Car Windshield Defrosting Systems
SAE-J903	Passenger Car Windshield Wiper Systems
SAE-J942	Passenger Car Windshield Washer Systems
SAE-J1100	Motor Vehicle Dimensions
SAE-J1292	Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring
SAE-J1992	Wheels/Rims-Military Vehicles-Test Procedures and Performance Requirements
SAE-J2014	Pneumatic Tires For Military Tactical Wheeled Vehicles

Application for copies may be addressed to the Society of Automotive Engineers, Inc. 400 Commonwealth Drive, Warrendale, PA, 15096.

2.3.2.2. American National Standards Institute (ANSI):

Application for copies may be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.

2.3.2.3. American Society of Testing and Materials:

ASTM D396	Standard Specification For Fuel Oils
ASTM D975	Diesel Fuel
ASTM D1149	Standard Test Method for Rubber
ASTM D2000	Standard Classification System for Rubber Products in Automotive Applications
ASTM D3699	Standard Specification For Kerosene
ASTM D5486	Standard Specification for Pressure-Sensitive Tape for Packaging, Box Closure, and Sealing

Application for copies may be addressed to the American Society for Testing Materials, 1916 Race Street, Philadelphia, PA 19103.

3. **REQUIREMENTS.**

3.1. DEFINITIONS. The following definitions apply throughout this document (unless otherwise specified):

3.1.1. Curb Weight (CW): empty vehicle, full fuel, lubricants, coolant, and Basic Issue Items (BII).

3.1.2. Payload: includes non-mission essential kits, mission essential support equipment, radios, and trailer tongue weight.

3.1.3. Gross Vehicle Weight (GVW): CW plus 2 soldiers (3 soldiers desired -- Heavy variant), their individual equipment and weapons (566 lbs, per MIL-HDBK-910 and MIL-STD-1366, for 2 soldiers and 828 lbs for 3 soldiers), and payload.

3.1.4. Gross Combined Weight (GCW): GVW plus the weight of the towed load.

3.2. MOBILITY. Unless otherwise specified, the mobility characteristics apply to all HMMWV variants at GCW.

3.2.1. Scope. The HMMWV shall be capable of operating, IAW the Operational Mode Summary / Mission Profile (OMS/MP),

Appendix A, during blackout, day/night operations, inclement weather, and in periods of limited visibility.

3.2.2. Mobility Rating. For each geographical location and soil condition listed, the HMMWV, at GVW, shall have a percentage NO-GO less than or equal to the values listed:

	Percent No-Go			
Scenario	**Germany (Lauterbach)**	**Korea (Cheorweon)**	**Jordan (Al Mafraq)**	**Tire Inflation Setting[4]**
Dry-Normal [1]	10	40	6	Cross Country
Wet-Normal [1]	17	41		
Wet-Slippery [2]	22	72		
Sand [3]			13	Mud / Sand / Snow

[1] October scenario
[2] June scenario
[3] January scenario
[4] All variants were modeled using the tire inflation settings specified in the HMMWV Technical Manual (TM-9-2320-280-10).

NRMM TERRAIN FILES

Location		**Off-Road**
Europe	Lauterbach, Germany	5322.tv
North East Asia	Cheorweon, Korea	32223.tv
Middle East	Al Mafraq, Jordan	3254iv.tv

3.3. SPEED/ACCELERATION. On a dry, level, hard surface roads:

3.3.1. Forward Speed. The HMMWV, at GVW, shall be capable of attaining 79 mph in the forward direction.

3.3.2. Acceleration. The HMMWV, at GVW, shall be capable of obtaining 30 mph within 7.9 seconds.

3.4. PAYLOAD.

3.4.1. Capacity. Unless otherwise stated, the HMMWV shall have a payload capacity of 4,550 pounds (4,999 pounds - Objective).

3.4.2. Kits. Kits are considered payload. The HMMWV shall accommodate (or provide equivalent capability for) the following kits: Underbody Protection Kit (UPK), Ballistic Protection Kit (BPK), all Ambulance Kits, Cargo Bed Cover, Tarp and Bows, Winch, Snowplow Kit, Troop Seats, Fording Kit

(60"), and the 400 Amp Alternator. National Stock Numbers (NSN) and part numbers for listed kits may be found in TM 9-2320-280-24P, -1 and –2.

3.5. MAINTAINABILITY.

3.5.1. Mean Time to Repair. The Mean Time To Repair for all Essential Unscheduled Maintenance Demands (EUMD) (MeanTTR_{EUMD}) shall be less than 2 hours.

3.5.2. Max Time to Repair. The Maximum Time To Repair for 90% of EUMDs (MaximumTTR_{EUMD}) shall be less than 4 hours.

3.5.3. Component Removal. Removal and replacement of any major sub-component or assembly shall require no more than 14 clock hours (10 clock hours – Objective) using two maintainers at the appropriate maintenance level.

3.5.4. Maintenance Ratios. Maintenance Ratios (MR), in terms of Maintenance Man-Hours per Operating Mile (MMH/OM), shall be equal to the following values.

Threshold:

Representative Mission	Org	DS/GS	Total
Standard	.0032	.0010	.0042
Shelter	.0034	.0015	.0049
Armament	.0032	.0010	.0042

Objective:

Representative Mission	Org	DS/GS	Total
Standard	.0023	.0007	.0030
Shelter	.0026	.0009	.0035
Armament	.0023	.0007	.0030

3.5.5. Preventative Maintenance Checks and Services (PMCS). Preventive maintenance shall not exceed 10 minutes for pre-operation checks, 10 minutes for post-operation checks, and 30 minutes for weekly PMCS.

3.5.6. Diagnostics.

3.5.6.1. The system shall utilize BIT/BITE and support equipment, limited to that which is currently and projected to

be available in the Army's inventory for 2000 and beyond.

3.5.6.2. The HMMWV shall incorporate embedded diagnostics compatible with the latest Army Test Measurement and Diagnostic Equipment (TMDE) and Interactive Electronic Technical Manuals (IETM).

3.6. RELIABILITY.

3.6.1. System Abort (SA). The HMMWV shall have a 90% (95% - Objective) probability of completing each 96-hour mission, as defined in the OMS/MP, without a SA.

3.6.2. Essential Function Failure (EFF). The HMMWV shall have a 75% (80% - Objective) probability of completing each 96-hour mission without an EFF.

3.6.3. Mean Mile Between System Abort (MMBSA). The HMMWV shall achieve a MMBSA of 1,000 miles (2,000 miles – Objective).

3.7. GRADABILITY. During execution of the following scenarios, there shall be no loss of stability, malfunction or degradation of stated requirements.

3.7.1. Longitudinal Slopes. Longitudinal slope operation shall be performed in both forward and reverse directions, ascending/descending, on a dry hard surface. The HMMWV:

3.7.1.1. at GVW, shall be capable of starting and stopping on slopes up to and including 60%.

3.7.1.2. at GCW, shall be capable of starting, stopping on a 40% longitudinal slope.

3.7.1.3. at GCW, shall be capable of starting, stopping and holding (using only the parking brake) on a 30% longitudinal slope.

3.7.2. Side Slopes. The HMMWV, at GVW, shall be capable of traversing side slopes up to and including 40% with either side of the vehicle facing up the slope.

3.7.3. Speed on Grade. For a distance of at least 300 miles a HMMWV, at GVW, shall be capable of ascending a 5% grade at 55 mph (60 mph – Objective).

3.8. FORDING. The HMMWV shall be capable of hard bottom fording in salt and fresh water, at 5 mph, in depths up to 30 inches (48 inches - Objective), without preparation, kits or any increased after-action maintenance requirements.

3.9. TRANSPORTABILITY. IAW MIL-STD-1366, the HMMWV shall:

3.9.1. Meet highway legal limits, without waivers or special permits, for all countries in which the HMMWV will be operated (current military installations and deployment sites both stateside and abroad).

3.9.2. Have military standard lifting and tie-down provisions, IAW MIL-STD-209 and MIL-HDBK-1791, to allow loading and securing vehicle loaded to GVW on all authorized means of transport.

3.9.3. Be rail transportable worldwide.

3.9.4. Be marine transportable by LCM-8, and larger vessels/ships to include roll-on/roll-off vessels.

3.9.5. Be air transportable at GCW (without removal of mission load) by C-130 and larger aircraft. A minimum of three HMMWVs at GVW shall be transportable by a single C-130 (3 Light Utility; 2 Heavy Shelter Carriers + 1 Light Utility; 2 Up-Armored + 1 Light Utility). The aircraft ramp may be used as an extension of the cargo deck.

3.9.6. Be externally transportable at GVW (without removal of mission load) by CH-47D and in tandem with its trailer/howitzer in the following conditions: 4,000 feet above sea level, 95° Fahrenheit (F), with a 30 Nautical Mile (NM) radius of action. Crew, cargo/ammunition shall be loaded in the aircraft up to the payload of the aircraft.

3.9.7. Be transportable by the latest model of the UH-60 in the following conditions: 4,000 feet pressure altitude, 95°F, with a 30 NM radius of action. This requirement applies to each of the configurations listed below:

Configuration	Weight	UH-60	Desired UH-60
Light Utility	CW	1	
- Command/Control	CW plus combat equipment	1	
- 2-Litter Ambulance	GVW less crew/patients	2	
Heavy Shelter	GVW	2	
- 4-Litter Ambulance	NA	NA	NA

Light Howitzwer Towing	CW plus sect equip & ammo	3	2
Light Weapons Carrier	TOW Missile Load Plan	2	1
Heavy Up-Armored	CW plus winch and combat equip	NA	2

3.9.7.1. For the Light Weapons Carrier and Up-Armored variants, removal of armament panels for transport in the second aircraft is acceptable (no removal – Objective), as long as reinstallation at the drop site can be accomplished in 15 minutes (10 minutes – Objective) using vehicle BII and four soldiers.

3.9.8. At GVW and without demounting subsystems, the Light Utility and USMC Ambulance version, Light Weapons Carrier, and Heavy Shelter Carrier shall be externally transportable by MV-22 (with nose gun) in the following conditions: 3,000 feet above sea level, 91.5°F, with a 100 NM radius of action.

3.9.9. At GVW (without demounting subsystems) shall be externally (internally - Objective) transportable by CH-53 in a stable configuration without risk to aircraft with a 150 knot cruise speed.

3.9.10. Withstand, without damage, the forces imposed by the wind at the maximum safe external load airspeed of the aircraft (maximum airspeed of the aircraft - Objective).

3.9.11. Be capable of Low Velocity Aerial Delivery (LVAD) (shelter demounted for Heavy Shelter Carrier version) by C-130 and C-17 at GVW, excluding crew, with and without towed load.

3.9.11.1. After a successful LVAD, vehicle shall be ready for operation in 15 minutes (10 minutes – Objective), after removal of LVAD rigging. The shelter remounting time for the Heavy Shelter Carrier is excluded from this requirement.

3.9.11.2. (Objective) LVAD for HMMWV plus towed howitzer on standard Type 5 airdrop platforms configured to 32-foot length.

3.10. VERTICAL STEP. The HMMWV shall be capable of climbing a vertical step head-on of 18 inches (24 inches – Objective).

3.11. VEHICLE HANDLING.

3.11.1. Turning Radius. The HMMWV shall not exceed a 25-foot curb-to-curb turning radius.

3.11.2. Stability. The HMMWV shall be capable of sustaining a .6 g lateral acceleration while negotiating a constant radius turn

3.12. RIDE QUALITY. The HMMWV shall meet ride quality requirements at CW and GVW.

3.12.1. Ride Limiting Speed. The HMMWV shall attain no more than 6 watts average vertical absorbed power, as measured at the driver's location, while negotiating the following Root Mean Square (RMS) ride courses at speeds listed below, with the tires at normal tire pressure

6-Watt Speeds

RMS (inches)	1.0	1.5	2.0	2.5
MPH	30	20	15	13

3.12.2. Vertical Acceleration. The HMMWV shall sustain no more than 2.5-G peak vertical acceleration at the driver's location while negotiating a non-deformable, half-round obstacle as listed below. Tires shall be at normal tire pressure.

Obstacle Crossing Speeds

Obstacle Height (inches)	4	6	8	10
MPH	50	18	15	10

3.13. RANGE. The HMMWV, at GVW, shall operate on internally carried fuel for a distance of at least 300 miles at an average speed of 30 – 40 mph on hard-surfaced roads over rolling terrain (GCW across the OMS/MP - Objective). Internally carried fuel includes all fuel tanks at no more than 95% full. (The HMMWV shall be capable of operating for an additional distance of at least 100 miles with the additional fuel reserves carried in standard Army containers and transported externally on mounting brackets provided as a kit – Objective.)

3.14. FUEL. The HMMWV shall operate on JP8 and standard diesel fuels dispensed using standard Army refueling systems for wheeled vehicles. All HMMWV variants (using JP8) shall achieve a minimum of 9.9 mpg (13.5 mpg – Objective).

3.15. SHELTER CARRIER. The HMMWV shall be capable of carrying a S250, S787 (SICPS) and S788 (Lightweight,

Multipurpose) shelters, loaded within payload. When necessary, the length of the HMMWV may be increased to 190.5 inches, (no length increase – Objective). Removal and installation shall be accomplished at organizational level.

3.16. TOWING.

3.16.1. Towed Load. The HMMWV, over the OMS/MP, shall accommodate towed loads up to 4,500 pounds. The tongue weight shall not exceed 450 pounds and is considered vehicle payload.

3.16.2. Brakes. The HMMWV shall have the capability to positively control the brakes of the towed system.

3.16.3. Pintle. The HMMWV shall have the capability to mount a pintle on the front and back of the vehicle.

3.16.4. Like-Vehicle. A HMMWV shall be capable of towing another HMMWV at GVW for 50 miles using the standard Army 5-ton wrecker tow bar.

3.16.5. Recovery/Towing. The HMMWV shall be capable of being recovered/towed from both the front and rear by 5-ton M939 series, Family of Medium Tactical Vehicles (FMTV), and Heavy Expanded Mobility Tactical Truck (HEMTT) wreckers.

3.16.6. Tow Eyes. Tow eyes on the HMMWV shall be capable of being used for towing and winch recovery operations.

3.17. TIRES. The HMMWV shall have tire tread that maximizes off-road mobility yet maintains safe on-road handling. Tires shall achieve a wear life of 12,000 miles (18,000 miles - Objective) over the OMS/MP. Tires shall permit safe driving after loss of air pressure in any two tires (four tires – Objective) for at least 30 miles over the OMS/MP (60 miles - Objective) without speed reduction.

3.18. CARGO TIE-DOWN PROVISIONS. The HMMWV shall have cargo tie-down provisions in the cargo area that meet MIL-STD-209 and are certified to transport ammunition.

3.19. SEATING.

3.19.1. Primary Crew Seats. The HMMWV shall have at least two primary crew seats (three seats for Heavy variant - Objective), which are ergonomically designed to provide leg, back, shoulder, and head support. The driver’s seat shall be adjustable to accommodate the 5th percentile female to the 95th

percentile male soldier.

3.19.2. Secondary Seating. Seating for at least two additional soldiers shall be provided for use in such missions as command and control and radio relay operations. (The seating shall be foldable flush into the deck – Objective.)

3.20. INDIVIDUAL WEAPONS STOWAGE. The HMMWV shall have readily accessible (quick release) weapons stowage (for all versions of the M-16, Squad Automatic Weapon (SAW), M4 Carbine, M203, and the Objective Individual Combat Weapon (OICW)) for up to four soldiers (depending on the version) without interfering with the operating functions, controls for vehicle operation, internal equipment controls, and ingress/egress.

3.21. SAFETY. The HMMWV shall meet the following Federal Motor Vehicle Safety Standards (FMVSS) for a vehicle in its weight class, except where noted.

FMVSS	Title	Exceptions
101	Controls and Displays	HMMWV does not have to meet paragraphs S5.2.1(a), Table 1 and S5.3.3 (meet paragraph S5.3 and Table 1, excluding seatbelt warning – Objective)
102	Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect	
103	Windshield Defrosting and Defogging Systems	An ice removal tool may be used for ballistic windshield prior to test
104	Windshield Wiping and Washing Systems	Applies to trucks greater than 10,000 lb GVW
105	Hydraulic Brake Systems	
106	Brake Hoses	
108	Lamps, Reflective Devices and Associated Equipment	HMMWV must comply with MIL-STD-1179. Front and rear identification are not to be included. Front and rear composite lamps shall be 11614156 Rev F and 11614157 Rev F, respectively in lieu of the metal housing lamps specified. The CWL receptacles, switch and wiring will not be provided. 11668932 Rev. A, blackout driving headlamp, will be provided in place of the metal housing lamp specified

FMVSS	Title	Exceptions
111	Rearview Mirrors	HMMWV must be equipped with two mirrors each comprising of a flat mirror section with at least 50 square inches of surface area and a convex portion having a surface area of at least 25 square inches and a radius of curvature between 35 and 65 inches. (Mirrors should be wider than they are tall to provide the best visibility to the rear – Objective)
113	Hood Latch System	
116	Brake Fluids	
119	New Pneumatic Tires for Vehicles other than Passenger Cars	
124	Accelerator Control Systems	
125	Warning Devices	
203	Impact Protection for the Driver from the Steering Control System	
204	Steering Control Rearward Displacement	(GVW's greater than 10,000 lbs – Objective)
205	Glazing Materials	
206	Door Locks and Door Retention Components	(Requirement is for ballistic doors – Objective)
207	Seating Systems	
208	Occupant Crash Protection	This system shall accommodate a soldier wearing full combat gear (to include LBE, personal body armor, and protective mask) and individual MOPP IV protective gear without interfering with vehicle or crew operation. Seat belt warning system is not required. Vehicle Crash Tests will not be required.
209	Seat Belt Assemblies	
210	Seat Belt Assembly Anchorage's	
212	Windshield Mounting	
216	Roof Crush Resistance	Applies to open top and weapons carrier models only. (Applied force at least equal to the vehicle GVW – Objective)
219	Windshield Zone Intrusion	(GVW's greater than 10,000 – Objective)
301	Fuel System Integrity	Full compliance for all HMMWV's with GVW's greater than 10,000 lbs. (M1114, Up-Armored Vehicle - Objective).

FMVSS	Title	Exceptions
302	Flammability of Interior Materials	

3.22. FRONT-END PROTECTION. The HMMWV shall have the ability to prevent damage to vehicle lights, body, and engine components, and to reduce/prevent water/mud ingestion into the radiator area while traveling cross-country at cross-country speeds.

3.23. VEHICLE SECURITY. The HMMWV, without inhibiting a quick egress, shall prevent unauthorized access to the vehicles interior during operations or while unattended.

3.24. CAMOUFLAGE. The HMMWV shall be painted in NATO three-color camouflage or desert tan using Chemical Agent Resistant Coating (CARC) or a DA DCSLOG approved substitute. (The HMMWV shall employ signature reduction techniques and materials in order to reduce its detection by visible, infrared, near-infrared, radar, laser, and acoustic devices – Objective.)

3.25. ENVIRONMENT.

3.25.1. Environmental Support. HMMWV shall comply with all applicable Environmental Protection Agency (EPA) standards in effect at the time of manufacture.

3.25.2. Climatic Conditions. The HMMWV shall be capable of full vehicle and crew (occupants of primary and secondary seating area) operation, transport, and storage in the climatic areas of hot, basic, and cold as defined by AR 70-38. A kit may be used to meet cold area vehicle and crew operations as long as it can be installed at/below the direct support level.

3.25.2.1. Storage. Must be capable of uncovered long term storage in hot, basic, and cold climatic areas as defined in AR 70-38, to include stowage on Pre-positioned (PREPO) ship for up to 30 months without loss of mission essential functions when routine unit-level (i.e., -10 level) maintenance is performed every six months.

3.25.3. Cab/Cargo Operating Environment. IAW MIL-STD-1472 (5.8.1 and 5.12.6) the HMMWV shall prohibit permanent physical injury and prevent fatigue for personnel during 10 hours of continuous operation in MOPP IV gear at temperatures between –50°F and 120°F. For the cargo area, a kit may be used as long

as it can be installed at/below the direct support level.

3.25.4. Operations Using Arctic and MOPP IV Clothing. While wearing individual arctic protective clothing and MOPP IV protective gear (during operational conditions) the crew shall be able to conduct safe, effective, and efficient operations and maintenance on the vehicle.

3.25.5. Nuclear, Biological, and Chemical (NBC).

3.25.5.1. The HMMWV shall be capable of operating in NBC environments and have NBC contamination/decontamination survivability equal to that of current wheeled vehicle systems.

3.25.5.2. Nuclear Survivability. Critical functions of the HMMWV shall survive the initial effects from nuclear weapons where at least 50% of the crew remains combat effective. The critical functions of the HMMWV shall be high-altitude electromagnetic pulse (HEMP) survivable. The critical functions of the HMMWV are driving and providing power to the payload, to include vehicle subassemblies and component parts needed to accomplish these tasks.

3.26. ELECTROMAGNETIC INTERFERENCE (EMI). The HMMWV shall comply with applicable military EMI and electromagnetic emission susceptibility requirements, and commercial electromagnetic compatibility standards/recommendations as needed to support vehicle electronic components/controls.

3.27. ELECTRICAL COMPONENTS. The HMMWV shall have:

3.27.1. A NATO electrical slave receptacle with electrical capability to jump-start vehicles with 24 volt systems.

3.27.2. Secure lighting and blackout drive.

3.27.3. Basic electrical outlet (to include on/off switch) in the crew compartment for 12 volt Direct Current (DC) and 24 volt DC, supplemental power for plugging in electrically operated devices (e.g., hand held radio battery chargers, computers, flashing warning lights, mounted water ration heater, etc.).

3.27.4. Electrical power source outlets, 24 volt (12 and 24 volt outlets – Objective), in the cargo compartment. Outlets

shall be flush with deck so as not to interfere with cargo.

3.27.5. Vehicle Electric Power Source.

3.27.5.1. A 28 Volts DC power source of at least 200 amperes delivered output at vehicle engine high idle speed (NTE 1250 RPM) (low adjusted idle speed [NTE 800 RPM] – Objective).

3.27.5.2. An idle RPM control to permit increasing and setting engine idle RPM without using a foot and/or hand throttle to support winch operations and cold weather start procedures and to provide increased electrical power generation. This high RPM control shall operate only when the vehicle is in park or neutral and automatically disengage when the vehicle is placed in gear.

3.27.5.3. Batteries. Vehicle batteries must meet current U.S. and NATO military standard requirements for both configuration and performance, in all climatic conditions.

3.27.5.3.1. HMMWV shall be able to start when the vehicle batteries lack sufficient power to start the engine, exclusive of the slave starting capability provided by the existing NATO Intervehicle Power Receptacle.

3.27.5.3.2. The vehicle electrical charging system shall optimize battery charging.

3.27.6. Radios. The HMMWV Light Utility version and Heavy Shelter version shall have a simultaneous mounting capability for a minimum of one High Frequency (HF) radio, one Enhanced Position Locating Reporting System (EPLRS), one individually mounted CNR, a Mobile Subscriber Radio Terminal (MSRT), and an intercom system, all of which can be crew operated directly from the cab without interfering with vehicle operations while vehicle is in motion. Additionally, a mounting point and primary power shall be provided to accommodate mounting of the Frequency Hopping Multiplexer (FHMUX).

3.27.7. Ancillary Electronic Equipment. The HMMWV shall accommodate the integration of and provide power and space for: Movement Tracking System (MTS)/Force XXI Battle Command-Brigade and Below (FBCB2), Driver Vision Enhancement (DVE) system, Global Positioning Systems (GPS), Light Vehicle Obscuration Smoke System (LVOSS), Maneuver Control System (MCS), NBC M8 Alarm or its replacement, and Identification Friend/Foe (IFF) systems. All of these systems shall be operated/used by the crew directly from the cab without

interfering with vehicle operations while vehicle is in motion. Power supplied for these systems is in addition to vehicle-required power.

3.28. TACTICAL SECURITY. The HMMWV noise signature shall be no greater than (50% quieter than – Objective) 85db at the driver's seat while driving with the windows down at 55 mph. A kit may be used to provide this capability. If a kit is used, it shall be installed at direct support level or below.

3.29. FUEL ACCESS CONNECTION. The HMMWV shall have a fuel access connection that allows access to HMMWV fuel for power units.

3.30. NIGHT VISION DEVICE COMPATIBILITY. Lighting, instrumentation, and windshield in the crew compartment shall be compatible with the latest generation of night vision devices. Windshield tinting shall not reduce visibility when using night vision devices. A dimmer switch for instrumentation lighting shall be added for viewing the instruments with the unaided eye while driving with the AN/PVS-14. This dimmer switch would allow adjustment of the instrumentation lighting so that it is not visually detectable with unaided vision at a distance no greater than that of the current HMMWV.

3.31. MOUNTING POINTS. The HMMWV shall have mounting points (fore, aft, and external) and power connections where required for mounting telephones, computers, antennas, water ration heaters, camouflage netting (externally), NATO bridge classification placards, flashing warning beacon kit, and mounting brackets for standard Army fuel/water containers.

3.32. HUMAN ENGINEERING. The HMMWV, to include controls, displays, configuration, required operating and maintenance procedures, and operating environment, will minimize (preclude - Objective) human performance errors, interface problems, and workload (physical and cognitive) requirements. The user interface should be uncomplicated and respect appropriate design guidance contained in MIL-STD-1472. System design and integration, to include application of armored crew protection kits, shall accommodate operation and maintenance by a 5th percentile female through a 95th percentile male soldier.

3.33. COMMONALITY. The HMMWV versions shall have the maximum practical part commonality while still meeting required characteristics.

3.34. SAFETY AND HEALTH HAZARDS. The HMMWV will be designed in accordance with all applicable system safety and health standards so as to minimize (preclude - Objective) risks associated with operating or maintaining the vehicle.

3.35. SURVIVABILITY.

3.35.1. Vehicle. The HMMWV shall be designed to survive the following threats: Conventional threat forces, insurgent forces, terrorists, drug traffickers, selected weapon systems, NBC contamination, HEMP/Electromagnetic Environmental Effects (E3), electronic warfare/information warfare, sabotage, urban center disturbances, and the effects of nature.

3.35.2. SOLDIER (USER). HMMWV operating, maintaining, and repairing requirements or characteristics should not increase personnel's detectability, likelihood of targeting or attack, or likelihood of injury if attacked. The HMMWV design shall reduce potential for fratricide, prevent damage if attacked and reduce soldier mental and physical fatigue.

VARIANT SPECIFIC REQUIREMENTS

3.36. MARINE CORP. The U.S. Marine Corps (USMC) has an overall length limit requirement as stated below. The stated length is without kit installation as long as the kits can be removed/reinstalled at organizational level.

3.36.1. Light Variant. All USMC versions using the Light variant as their base platform, including the USMC 2-litter ambulance, shall not exceed 182.5 inches.

3.36.2. Heavy Variant. Unless otherwise specified, USMC versions using the Heavy variant at CW shall not exceed 190.5 inches. The 4-Litter ambulance shall not exceed 204.5 inches.

3.37. ARMORED VERSIONS.

3.37.1. Self-Defense Weapons.

3.37.1.1.1. Primary. The Light Weapons Carrier and Heavy Up-Armored HMMWVs shall have provisions for mounting self-defense weapons (e.g., M2, M240, M249, M60 Machine Gun, MK-19 Grenade Machine Gun, on top of the vehicle. The mounting device shall permit operation of the weapon while traversing 360° horizontally with little effort from the gunner and without interfering with other crew operations. Provision to

enable the 5th to 95th percentile target audience soldier to operate the weapon (without interfering with other crew operations) is required. A mechanical traverse with a positive travel lock capability is required. The gunner must be able to perform all crew service functions on the weapon while it is mounted in operating position. Spent brass and links shall not enter the crew compartment.

3.37.1.2. Secondary (required for MP systems and Infantry TOW missile system carrier using the Heavy Up-Armored version as their platform, desired for all other HMMWV Heavy Up-Armored versions). There shall be provisions for mounting a second rear-firing self-defense weapon station (i.e., M2, M240, M249, M60 Machine Gun, MK-19 Grenade Machine Gun, to provide defense to the rear 180° of vehicle. The mount shall have provision to be capable of traversing with little effort from the gunner and without interfering with crew operation. Provision to enable the 5th to 95th percentile target audience soldier to operate the weapon (without interfering with other crew operations) is required. The crew must be able to perform all crew service functions on the weapon while it is mounted at the rear facing station. Spent brass and links shall not enter the crew compartment.

3.37.2. Ammunition Storage. Provisions shall be made for self-defense weapon ammunition storage that meet U.S. Army Defense Ammunition Center and School (USADACS) security certification requirements to transport ammunition over the vehicle mission profile. Storage provisions shall have a readily accessible quick release. Space allocations shall be provided for the following type and quantity of standard Army ammunition:

Ammunition Type	Quantity
M16	2 cans
M203	1 can
Mk-19, M2, or M60/M240	6 cans
M249	4 cans

3.37.3. Gunner Restraint System. Those HMMWV versions having a self-defense weapon shall have a gunner restraint system that allows 360° weapon operations while preventing ejection of the gunner in case of an accident. This system shall not hinder quick re-entry into the vehicle.

3.37.4. Winch. A winch kit shall be provided with all Heavy Up-Armored and Light Weapons Carrier versions.

3.37.5. Heavy Up-Armored Version.

3.37.5.1. Gun Shield. A gun shield shall be provided as a kit for the Heavy Up-Armored version.

3.37.5.2. When required, the Heavy Up-Armored HMMWV shall have provisions for mounting the Objective Crew Served Weapon (OCSW) with ammunition can.

3.37.5.3. Built-in Protection. The Heavy Up-Armored version shall have built-in protection levels for the crew compartment and for the secondary gunnery position, if present.

3.37.5.4. Maintenance. Design of the Heavy Up-Armored version shall be such that the ballistic protection has minimum impact on vehicle maintenance. Easy access to PMCS points is essential.

3.37.5.5. Payload. The Heavy Up-Armored version shall have a minimum payload of 1,800 pounds exclusive of the basic armor protection.

3.37.5.6. Cab-Cooling. Cab-cooling requirements shall be met with closed windows.

3.37.6. Light Weapons Carrier version.

3.37.6.1. Crew Compartment Protection Kit Mounting Provisions. The HMMWV Light Weapons Carrier version shall have protection kit mounting provisions installed that allow for independent installation of the UPK and BPK as well as the combined kits. No welding shall be required to mount the protection kit on factory installed mounting provisions. The kit shall be mountable and demountable at Organizational Maintenance Level. It is understood that the full protection kit may not be mountable at the same time. As a minimum, the payload of the Light Weapons Carrier version shall be no less than 1,475 pounds (1,700 pounds - Objective), after installation of only the BPK.

3.37.6.2. If a full overhead crew compartment protection kit is installed, it is required that it be compatible with the weapon system.

3.37.6.3. (Objective) Gun Shield.

3.38. HYBRID ELECTRIC (HE) VERSION.

3.38.1. Definitions. A HE vehicle typically consists of the following four main components: power unit, export power, motive and energy storage. Additional definitions for clarity are also included.

3.38.1.1. Power Unit: Item/system (i.e. – engine, fuel cell, turbine, etc.) that uses fuel (i.e. – gas, hydrogen, etc.) supplied by the user.

3.38.1.2. Export Power: Conditioned power that user can utilize to run mission equipment (i.e. – shelter systems, radios, weapons, etc.).

3.38.1.3. Motive: Method/system employed to provide power to the wheels and propel the vehicle. For example, traction motors.

3.38.1.4. Energy Storage: Method/device/system (i.e. – batteries, capacitors, flywheels, etc.) available to provide/store electrical energy. Energy storage can be used instead of or in conjunction with the power unit and typically provides for load leveling and burst power demands.

3.38.2. Energy Management. The energy storage system shall be managed in such a manner that performance and life expectancy is optimized during all operational situations. During emergency situations, less than optimal energy management may be employed; however, every effort should be made to limit permanent damage.

3.38.3. Survivability.

3.38.3.1. Silent Watch. The HE shall, without use of the power unit, be capable of sustaining 6 kW-hours (9 kW-hours - Objective) of continuous electrical power usage over a 12-hour period.

3.38.3.2. Silent Mobility.

3.38.3.2.1. On a dry, level, hard surfaced road, the HE shall be capable of driving 20 miles at 35 mph without use of the power unit.

3.38.3.2.2. Mission. The HE shall be capable of driving 5 miles (without power unit, 2 miles in - 1 mile move - 2 miles out) and performing silent watch.

3.38.4. Export Power. The HE shall have the capability to manage and generate power IAW MIL-DTL-53133B.

3.38.4.1. Power Conditioning. Each HE HMMWV shall have the capability to provide a minimum of 15kW of conditioned power.

3.38.4.1.1. Parallel Systems. Each HE, while providing 15kW of conditioned power, shall be capable of providing power to 1 (2 – Objective) additional HE HMMWV(s) for power conditioning. HE HMMWV's may be up to 50 feet apart.

3.38.4.1.2. System Integration. The power generation system shall not infringe/interfere with crew operations and shall accommodate the integration of available shelters. (The power generation system shall be integral to HE HMMWV without infringing upon currently available crew/cargo space or operations. Equipment utilized for power generation is considered part of the vehicle's CW and shall not reduce overall payload. - Objective)

3.38.4.2. On the Move. The HE shall be capable of supplying up to 5 kW (10 kW - Objective) of power to the payload and/or ancillary equipment while negotiating the OMS/MP.

3.38.4.3. Noise. While stationary and in the power generation (export power) mode, the noise produced by the HE shall be such that it is: 1) no greater than 70dB at/beyond a 7 meter radius from the vehicle and 2) undetectable at distances in excess of 300 meters.

3.38.5. Limp Home. The HE shall have the ability to function in an emergency mode in the event that either the power unit or energy storage device becomes unavailable. It is expected that vehicle performance will be degraded; however, every attempt shall be made to minimize overall impact.

3.38.6. Fuel Consumption: The HE shall achieve a minimum of 11.7 mpg (13.5 mpg – Objective).

3.38.7. Braking.

3.38.7.1. Coasting. The HE shall mimic the characteristics of conventional vehicles with respect to coasting.

3.38.7.2. Modulation. The HE shall accommodate current HMMWV brake modulation practices.

3.38.8. Integration. The HE design shall not infringe / interfere with crew or cargo space, irrespective of variant.

3.38.9. Diagnostics.

3.38.9.1. The HE HMMWV shall be capable of fault isolation to a single LRU with a 90% assurance of correct fault diagnosis (95% - Objective). The HE HMMWV shall be equipped with an "umbilical" capability to support vehicle-to-vehicle diagnostics if one vehicle's embedded diagnostics has mal-functioned/failed.

3.38.9.2. IETM Requirements. An on board IETM will incorporate the capability to conduct diagnostics, maintenance/supply transactions, and digitally convey maintenance information. An accessible interface port will be provided to support IETM updates, export of data to a portable maintenance aid/display to support 100% of sustainment maintenance tasks.

3.38.10. Maintainability/Reliability.

3.38.10.1. Operator and Operator Maintenance. The HE HMMWV shall automate of 75% (95% - Objective) of all daily crew PMCS checks. The time required to perform all non-automated tasks will be no more than 5 minutes (3 minutes - Objective). The operator shall be capable of replacing 80% (100% - Objective) of all LRUs.

3.38.10.2. Maintainability. The HE HMMWV shall require no more than 6 common tools to perform 95% of all required maintenance actions (3 common tools – Objective).

3.38.10.2.1. The Maximum Time To Repair (MaxTTR) shall not exceed 15 minutes for 90% (95% - Objective) of all repairs with a MTTR not to exceed 30 minutes for any single repair.

3.38.10.2.2. The maintenance ratio shall not exceed 0.05 man-hours (0.025 - Objective) per operating hour (includes scheduled and unscheduled maintenance).

3.38.10.3. Reliability. During pulse operating periods (excludes pulse logistics periods) the HE HMMWV will attain an average pulse availability of 99% (99.5% - Objective) using system abort criteria.

3.38.10.3.1. The HE HMMWV shall attain 2,500, Mean Miles Between System Abort.

3.38.10.3.2. The HE HMMWV must be capable of operating w/o failure for 72 hours (168 hours – Objective).

3.38.10.3.3. The HE HMMWV must be designed to attain 10,000 Mean Miles Between System Abort-Mobility.

3.39. HEAVY HOWITZER TOWING VERSION. (Objective).

3.39.1. Payload. The Heavy Howitzer Towing version shall have a payload capacity of at least 3,500 pounds (3,999 pounds - Objective).

3.39.2. Towing Capacity. The Heavy Howitzer Towing version shall have a towing capacity of at least 5,500 pounds with a tongue weight up to but not exceeding 550 pounds. Tongue weight is included as part of the total vehicle payload.

4. **QUALITY ASSURANCE PROVISOINS**.

Title	RQMT/Method	PVT	FPVI	CT	QCI
Mobility – Scope	3.2.1				
	3.2.2				
	3.3.1				
	3.3.2				
	3.4.1				
	3.5.1				
	3.5.2				
	3.5.3				
	3.5.4				
	3.6.1				
	3.6.2				
	3.6.3				
	3.7.1.1				
	3.7.1.2				
	3.7.2				
	3.7.3				
	3.8				
	3.9.1				
	3.9.2				
	3.9.3				
	3.9.4				

Title	RQMT/Method	PVT	FPVI	CT	QCI
	3.9.5				
	3.9.6				
	3.9.7				
	3.9.7.1				
	3.9.8				
	3.9.9				
	3.9.10				
	3.9.11				
	3.9.11.1				
	3.11				
	3.12.1				
	3.12.2				
	3.13				
	3.14				
	3.15				
	3.16.1				
	3.16.2				
	3.16.3				
	3.16.4				
	3.16.5				
	3.16.6				
	3.17				
	3.18				
	3.19.1				
	3.19.2				
	3.20				
	3.21				
	3.22				
	3.23				
	3.24				
	3.25.1				
	3.25.2				
	3.25.3				
	3.25.4.1				
	3.25.4.2				
	3.26				
	3.27.1				
	3.27.2				
	3.27.3				
	3.27.4				
	3.27.5				
	3.27.6.1				
	3.27.6.2				
	3.27.6.3				
	3.27.6.3.1				
	3.27.6.3.2				
	3.27.7				
	3.27.8				
	3.28				

Title	RQMT/Method	PVT	FPVI	CT	QCI
	3.29				
	3.30				
	3.31				
	3.32.1.1				
	3.32.1.1.1				
	3.32.1.1.2				
	3.32.1.2				
	3.32.1.2.1				
	3.32.2				
	3.32.3				
	3.32.4				
	3.32.5.1				
	3.32.5.2				
	3.32.5.3				
	3.32.5.4				
	3.32.5.5				
	3.32.6.1				
	3.32.6.2				
	3.33.2				
	3.33.3.1				
	3.33.3.2.1				
	3.33.3.2.2				
	3.33.4				
	3.33.4.1				
	3.33.4.2				
	3.33.5				
	3.33.6				
	3.33.7.1				
	3.33.7.2				
	3.33.7.3				
	3.33.8				
	3.33.9.1				
	3.33.9.2				
	3.33.10.1				
	3.33.10.2				
	3.33.11.1				
	3.33.11.2				
	3.33.11.2.1				
	3.33.11.2.2				
	3.33.11.3				
	3.33.11.3.1				
	3.33.11.3.2				
	3.33.11.3.3				
	3.34.1				
	3.34.2				
	3.35				
	3.36				
	3.37				
	3.38				

Title	RQMT/Method	PVT	FPVI	CT	QCI
	3.39				
	3.40				
	3.41.1				
	3.41.2				
	3.42				

5. **PREPARATION FOR DELIVERY.**

5.1. VEHICLES: Vehicles shall be processed in accordance with the contract and the approved Equipment Preservation Data Sheets (EPDS) developed by the contractor and approved by the government. Vehicles shall be provided with drive-away capability unless otherwise specified.

5.2. BASIC ISSUE ITEMS: Basic Issue Items shall be preserved, packaged and packed into wood boxes and be packed separately from other equipment.

5.3. DEPROCESSING INSTRUCTIONS: The contractor shall prepare deprocessing instructions for each vehicle that will enable receiving personnel to place the vehicle in full operation condition.

5.4. MARKING: Identification and contract data markings are not required on drive-on, drive-off vehicles that are shipped within the Continental United States. Unless otherwise specified, address, weight, and cube markings are also not required. The address marking of vehicles for unit movement overseas shall be in accordance with the applicable regulations of the military department involved. Address markings, identification, and contract data shall be stenciled on a marking board/panel or applied by attaching a preprinted label on the vehicle's surface with ASTM D 5486, Type III, Class 2 tape. When the address label is attached directly to the surface of the vehicle, the label shall be placed either on the rear of the vehicle or on the right side near the rear of the vehicle. When marking boards/panels are used, they shall be secured on the front of the vehicle. Unless otherwise specified, the markings shall be positioned on the vehicle at a height of not more than 6 feet or less than 4 feet.

5.4.1. Markings, Marking Materials, and Any Special Markings: MIL-STD-129 provides the minimum requirements for uniform military marking and procedures for their application. BII/COEI/OVE and removed items shall be considered assortment of related items, which cannot be identified under a single

stock number but which support a specific weapon system or end item. These items shall be packed in shipping containers and shall be marked with a brief description of the contents in lieu of the entire identification data required by MIL-STD-129. Containers shall be marked "ASSORTED BII (COEI/OVE or REMOVED ITEMS) FOR (NSN), (U.S. ARMY REGISTRATION NUMBER). Use the NSN and registration number of the vehicle. Packing lists shall be prepared for each shipping container in accordance with MIL-STD-129."

5.5. MOTOR VEHICLES OR MECHANICAL EQUIPMENT: Motor vehicles or mechanical equipment powered by internal combustion engines are a hazard for transport and must comply with the Code of Federal Regulation, Title 49, and as applicable the International Air Transport Association Dangerous Goods Regulations, International Maritime Dangerous Goods Code, or the Joint Service Regulation AFJMAN24-204 (for military air shipments).

6. **NOTES**.

6.1. DEFINITIONS:

6.1.1. Highway: Four or more lanes, often divided, all-weather primary roads used for heavy and high-density traffic usually with a limited access to/from other roads.

6.1.2. Primary Roads: Two or more lanes, all-weather, maintained, hard surface (paved) roads with good driving visibility used for heavy and high density traffic. These roads have lanes with a minimum width of 9 feet; road crown to 2 degrees and the legal maximum GVW/GCW for the country or state is assured for all bridges.

6.1.3. Secondary Roads: Two lanes, all weather, occasionally maintained, hard or loose surface (e.g., large rock, paved, crushed rock, gravel) roads intended for medium-weight, low-density traffic. These roads have lanes with minimum width of 8 feet and no guarantee that the legal maximum GVW/GCW for the country or state is assured for all bridges.

6.1.4. Cross Country: Vehicle operations over terrain not subjected to repeated traffic and where no roads, routes, well-worn trails or man-made improvements exist. (This definition does not apply to vehicle test courses that are used to simulate cross-country terrain.)

DRAFT – Appendix A

MODE SUMMARIES AND MISSION PROFILES (OMS/MP)
FOR THE
HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV)

Table 1. Versions versus representative missions.

Version	Representative Mission
Light Utility	Standard
Light Weapons Carrier	Armament, IBCT RSTA
Heavy Shelter Carrier	Shelter
Heavy Up-Armored	Armament
Heavy and Light Howitzer Towing	Standard
Ambulance (4- and both 2-Litter)	Standard

Mission Profile (Wartime/Peacetime). Scenarios are based on a 96-hour (4-day) length. There are two 10-hour shifts per 24-hour day. Missions are distributed as evenly as possible between the shifts.

Table 2. Usage.

Missions	Miles/Mission	Missions/96 Hr.	Miles/96 Hr.
Standard	10	32	320
Shelter	50	8	400
Armament	37.5	8	300

Table 3. Payloads (percentage of total missions).

Missions	No Load	½ Load	Full Load
Standard	10%	30%	60%
Shelter	-	-	100%
Armament	-	-	100%

Table 4. Trailer towing (percentage of total missions).

Missions	No Towed Load	½ Maximum Towed Load Weight	Maximum Towed Load Weight
Standard	25%	50%	25%
Shelter	10%	-	90%
Armament	25%	-	75%

Exception: The Heavy/Light Howitzer Towing versions mimic Shelter requirements.

Table 5. Kit Usage (percentage of missions).

Missions	Winch Kit	Crew Protection Kit
Standard	50%	50%
Shelter	75%	0%
Armament	100%	100%

Table 6. Terrain profile (percent of operations).

Missions	Primary Roads	Secondary Roads	Cross-Country
Standard	30%	30%	40%
Shelter	30%	50%	20%
Armament	30%	30%	40%
IBCT RSTA	20%	20%	60%